



S10.02-P -1

LAND EVALUATION MODEL "ALBARIZA" FOR PREDICTING VINEYARD PRODUCTIVITY

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Despite the economic importance of vineyards in Europe the wine sector is facing severe challenges from increased global competition. In this paper, within the framework of the Land Evaluation Decision Support System MicroLEIS DSS, an agronomic model called Albariza was developed to secure grape production in Andalusia region, Southern Spain. The input land variables considered for modelling were: slope, soil depth, clay content, bulk density, hydraulic conductivity, calcium carbonate and cation exchange capacity. Furthermore, vineyard cultivators and wine making experts played an important role in the research work, defining and collecting the output variable called land suitability index for vineyard production. The Albariza model was built by using a Multiple Linear Regression (MLR) with data collected from 21 selected benchmark sites representative of the Denominations of Origin (DO) of Jerez-Xérès-Sherry and Manzanilla-Sanlúcar de Barrameda. The regression coefficient (R^2) obtained in the calibration of Albariza model was equal to 0.722. Finally, the validation was carried out by using new input data from representative soils of vineyards located in others DO in Andalusia region such as Antequera-Málaga, Montilla-Moriles, Ronda and Condado-Aljarafe. The validation showed the high accuracy of the model and its capacity to discriminate the most suitable sites for vineyards productivity in new cultivation scenarios. The methodologies and information generated in this research can be extrapolated to other Mediterranean areas. Therefore, in a longer term, the impact of the present research would help to improve the competitiveness of the European viticulture sector at the global level.